STUDENT SUSTAINABILITY COMMITTEE

Final Report

Thank you for your commitment to green initiatives at the University of Illinois. One of the final steps in completing the terms of the funding agreement for your project is the submission of a Final Report with key information about your project. You will also need to submit a detailed report of expenses (if you don't list it within this document) as well as supporting photos to showcase your project.

Please be as accurate as possible in describing the project (including possible setbacks or challenges in meeting the initial goals of the project). Not fully meeting your project's goals will not disqualify you from making future funding requests as long as your reports are as complete and accurate as possible. If you have any questions, please contact the Student Sustainability Committee, at sustainability-committee@illinois.edu.

Project Name: Energy Farm LED lighting upgrade

Date of Report Submission: 1/20/2022

Project Purpose:
This funded project allowed for the upgrade of lighting in a high bay workshop area utilized by Energy Farm staff / student employees, graduate researchers, and faculty associated with the research mission of the Energy Farm. The initial lighting installed at the construction phase of the building in 2010 was high intensity discharge lighting. These lighting fixtures are not energy efficient and also contain Mercury, which adds a hazardous waste consideration to bulb recycling. Additionally, light levels measured in the workspace were significantly below the OSHA recommended light levels for the classification of activities within this space.

This funding allowed for the removal of outdated fixtures, upgraded lighting fixtures to LED, and decreased the per fixture energy consumption while increasing the overall light levels to an acceptable workspace benefiting the University users.

Power measurements before the lighting upgrade was an average of 2125 watts with an average illumination of 216lux. After upgrade the average power consumption dropped to 1750 watts but with an average illumination of 821lux. While the power consumption decrease was only 17%, the 380% increase in lighting levels meeting the OSHA minimum standard of 750 lux, this is a significant improvement.

Finally, with the approval of a change order, outdated HID light fixtures over the exterior doors were upgraded to LED fixtures with functional photocells. Several of these old fixtures had non-functional photocells leading to 24/7 operation.

Project Summary:
February 2021 – Student Intern measured initial light levels prior to improvements
April 2021 - Light fixtures were installed
May 2021 - Student employee measured final light levels and produced summary graphics of light distribution pre/post improvements.
November 2021 – Outside HID light fixtures were upgraded to LED.
December 2021 – All expenses have been accounted for allowing project close out.

Summary of Project Expenditures:
The initial project came in under budget (see table below) at $7,291.95 well below the project estimate of $8,822. This allowed consideration for the change order requested at $1,043.22, also below budget estimate request of $1,100.

Problems/Challenges Encountered
Despite the challenges encountered overall with changes in operation to address COVID, the work was able to complete on time with minimal impact to daily activities. This was primarily thanks to the Campus proactive guidelines that allowed contactors and university staff to continue work.

Student Involvement and Outreach to Date:
Due to the COVID pandemic, the ACES student safety intern was unable to be involved on site. Once the Energy Farm's student employee was able to work on site again, they were involved in learning how to make light measurements, create heat maps, and produced the graphics attached showing the progress of this project.

Marketing and Promotion Efforts to Date:
Due to the COVID pandemic, in 2021 all tours that would normally visit the Energy Farm and see this and several other SSC supported past projects were suspended. Starting in Fall / Winter 2021 we are starting to received visitors again who benefit from the improved atmosphere provided through this upgrade. Signage has been requested indicating the investment by SSC to the improved lighting.

Additional Comments:
Any additional comments/relevant information for this report

In addition to the above fields, please provide a detailed accounting of how the funding was spent as well as pictures of the final project in an email to sustainability-committee@illinois.edu. Thank you again for your commitment to sustainability.

FUNDING SUMMARY INITIAL PROJECT

ACES Contribution [1-200250-416001-416025]			
Fiscal Period	**Labor Cost**	**Material Cost**	**Total**
Mar-21	$313.61	$1,068.19	1,381.80
Apr-21	$415.30	$25.71	441.01
Totals:			**$1,822.81**

SSC Contribution [1-304413-802050-802602]			
Fiscal Period	**Labor Cost**	**Material Cost**	**Total**
Mar-21	$627.26	$2,136.67	2,763.93
Apr-21	$830.72	$51.47	882.19
Totals:			**$3,646.12**

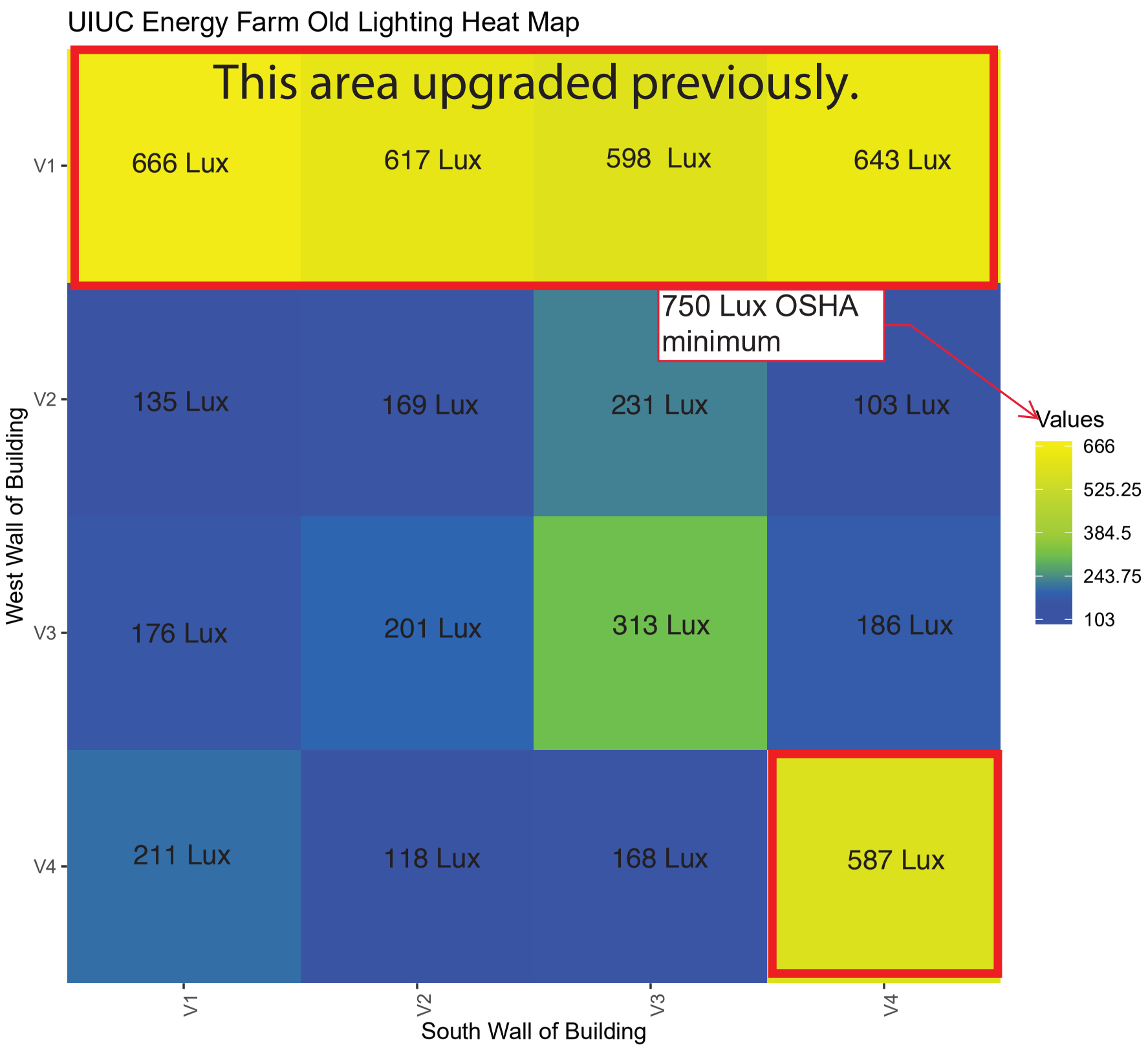
Crop Sciences Contribution [1-100021-802050-802004]			
Fiscal Period	**Labor Cost**	**Material Cost**	**Total**
Mar-21	$313.62	$1,068.33	1,381.95
Apr-21	$415.34	$25.73	441.07
Totals:			**$1,823.02**

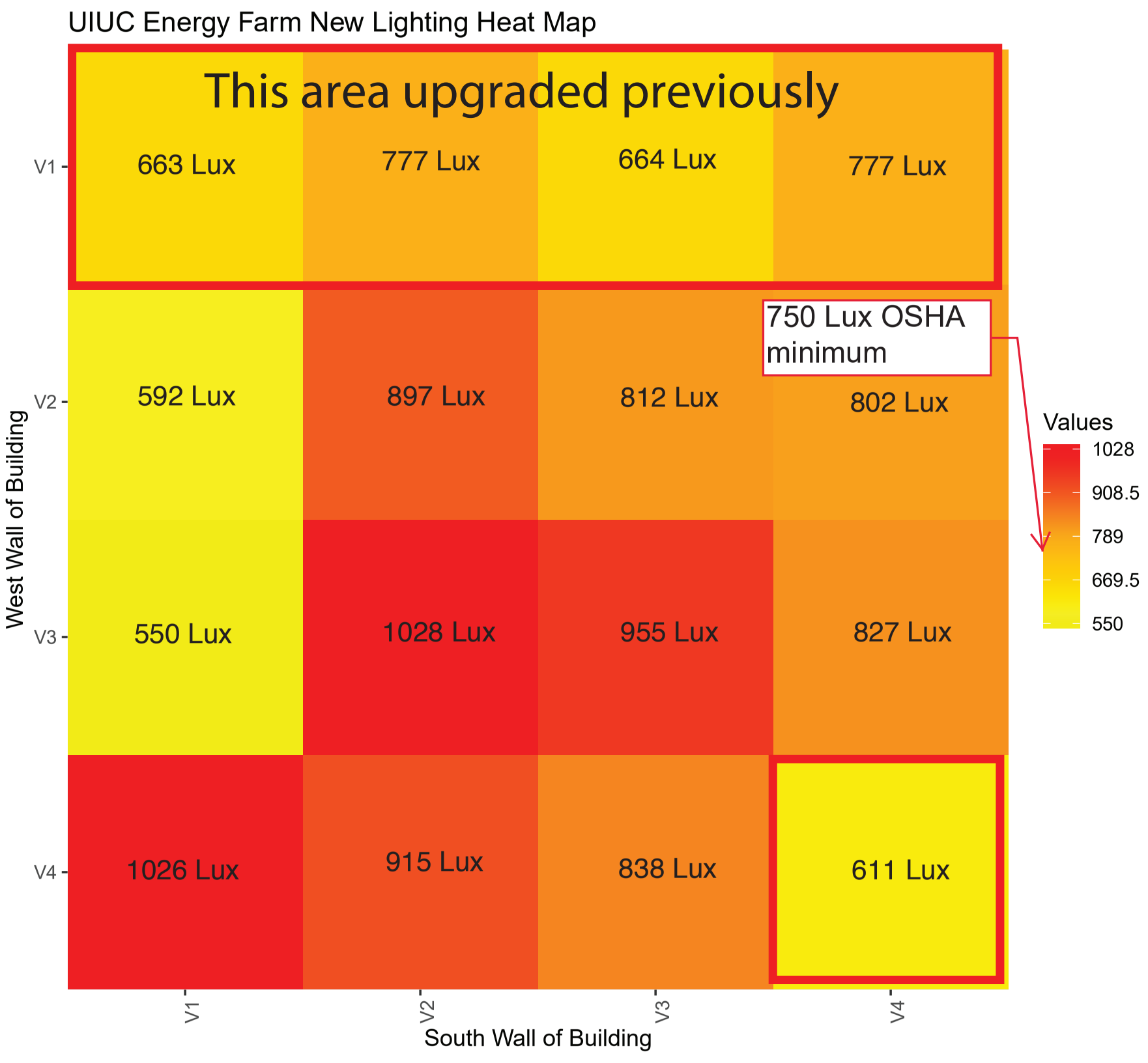
TOTAL EXPENDITURE **$7,294.95**

FUNDING SUMMARY CHANGE ORDER ADDITION

Fiscal Period	**Labor Cost**	**Material Cost**	**Total**
Nov-21	$421.80	$0	421.80
Dec-21	$0	$621.42	621.42
Totals:			**$1043.22**

Lighting fixtures upgrade


UIUC Energy Farm Old Lighting Heat Map
This area upgraded previously.
666 Lux
617 Lux
598 Lux
643 Lux
750 Lux OSHA minimum
135 Lux
169 Lux
231 Lux
103 Lux
176 Lux
201 Lux
313 Lux
186 Lux
211 Lux
118 Lux
168 Lux
587 Lux
V1
V2
V3
V4
West Wall of Building
South Wall of Building
Values
666
525.25
384.5
243.75
103


UIUC Energy Farm New Lighting Heat Map
This area upgraded previously
663 Lux
777 Lux
664 Lux
777 Lux
592 Lux
897 Lux
812 Lux
802 Lux
750 Lux OSHA minimum
550 Lux
1028 Lux
955 Lux
827 Lux
1026 Lux
915 Lux
838 Lux
611 Lux
V1
V2
V3
V4
West Wall of Building
South Wall of Building
Values
1028
908.5
789
669.5
550